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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,626	10/22/2001	Avinash Dalmia	03141-P0376A WWW/DC	5066
24126	7590	04/30/2004	EXAMINER	
ST. ONGE STEWARD JOHNSTON & REENS, LLC			OLSEN, KAJ K	
986 BEDFORD STREET			ART UNIT	
STAMFORD, CT 06905-5619			PAPER NUMBER	

1753

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/029,626

Applicant(s)

DALMIA ET AL.

Examiner

Kaj K Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,6,9-11,14 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,9-11,14,16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Oath/Declaration***

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 2 is rejected for the same reasons set forth in the previous office action. Applicant urges that the two substrates may be in contact with one another, and yet still consist of two substrates. The examiner would agree with that assertion, but that is not what the claim states. The claim states the substrates are "combined" implying that what was once two substrates is now only one. Hence, claim 2 appears to be broader than the claim it depends from. The examiner recommends the applicant instead amend claim 2 to state that the two substrates are part of a common substrate.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 9-11 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative as being obvious under 35 U.S.C. 103(a) over Otagawa et al (USP 4,900,405).

This new rejection was necessitated by applicant's amendment to the claims eliminating any reference to the electrolyte thickness in claims 1 and 9.

7. Otagawa discloses a sensor where first and second sensors 10 are deposited onto a substrate 12 (see fig. 3). Otagawa further discloses an electrolyte material to be deposited over each of the sensing and counter electrodes of the various sensors and further teaches the use of an reservoir opposite the substrate for hydrating the sensor. See fig. 10 and col. 7, line 12 and col. 9, line 63. Although it is unclear if Otagawa ever explicitly suggests the use of the reservoir of fig. 10 for the particular sensor embodiment of fig. 3, one possessing ordinary skill in the art would have been motivated to utilize the reservoir of fig. 10 for the embodiment of fig. 3 in order to ensure that the electrolytic medium is sufficiently hydrated (col. 9, line 64 through col. 10, line 1).

8. With respect to the use of inert electrode materials, see the various uses of gold in Table 1.

9. With respect to the use of a reference electrode, see col. 8, lines 43-45.

***Claim Rejections - 35 USC § 103***

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 1, 2, 5, 6 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maclay et al (USP 5,716,506) in view of Otagawa et al (USP 4,900,405).

12. Maclay discloses a gas sensor comprising a first cell and a second cell. Each cell has a sensing electrode 14 and a counter electrode 16 deposited on a surface of a substrate and being covered with a Nafion electrolyte. One cell differs from the other cell by either having its electrolyte with a different thickness than that of the other cell or by having its sensing electrode made of a material different from that of the other cell. See col. 7, line 50 to col. 10, line 10 (particularly col. 9, lines 64-67 and col. 10, lines 12-18). Maclay does not explicitly set forth a reservoir in contact with the electrolyte material on a side opposite of said substrate. However, Otagawa discloses a water source (i.e. reservoir) 43 for the Nafion electrolyte. See fig. 2 and 10; col. 7, line 12 and col. 9, line 63. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Otagawa for the sensor of Maclay because Nafion requires hydration to conduct ions (as discussed at col. 11, lines 24 of Otagawa).

13. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maclay in view of Otagawa as applied to the claims above, and in view of Campbell et al (USP 4,525,704) or Semersky et al, (USP 4,172,770).

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14. These claims differ by calling for a reference electrode for each cell. Campbell discloses a sensor with a sensing electrode 24, a counter electrode 38 and a reference electrode 36, wherein the functions of the counter electrode and the reference electrode can be combined into one electrode. See col. 2, line 52 to col. 4, line 25. Semersky discloses a sensor with a sensing electrode 25, a counter electrode 24 and a reference electrode 23 (col. 3, lines 64-67). At col. 4, lines 40-54, the relative merits of a 3-electrode system (a less variable potential is maintained for the sensor) and a 2-electrode system are discussed. It would have been obvious for Maclay to add a reference electrode in view of Campbell or Semersky, because the relative merit of a 3-electrode system (a less variable sensor potential) versus a 2-electrode system (elimination of an electrode means a saving in material cost and a more streamlined configuration) is known. Selecting one system over the other is a matter of design choice. The obviousness is believed to be enhanced by the fact that Otagawa shows a Nafion electrolyte sensor with three electrodes 18, 30, 32 (see figure 1; col. 6, lines 18-22).

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maclay in view of Mase et al (USP 4,647,364).

16. This claim further differs in calling for the sensing electrodes of the two cells to share the counter electrode and the reference electrode. Mase discloses a common electrode 12 being shared by one cell 12-22 and another cell 12-18. See figure 2; col. 8, lines 46-64. It would have been obvious for Maclay to make one counter and one reference electrode common to the sensing electrode of each cell in view of Mase, because eliminating electrodes would mean a saving in material cost. The electrodes are typically made of Pt or Au, which are expensive precious metals.

*Response to Arguments*

17. Applicant's arguments filed 11-17-2003 have been fully considered but they are not persuasive. Applicant urges that it would not have been obvious for Maclay to consider the use of a reservoir because Maclay lacks any electrolyte material to be hydrated. It is unclear if applicant is alleging that Maclay lacks an electrolyte or merely lacks an electrolyte that needs to be hydrated. However, either allegation would be incorrect. Maclay teaches the use of Nafion as an electrolyte (col. 8, lines 20-29). This is exactly the material that Otagawa was suggesting was in need of hydration (see paragraph bridging col. 9 and 10 and col. 10, lines 32-44). Hence one possessing ordinary skill in the art would have been motivated to provide a hydration means for the electrolyte of Maclay, because Nafion is a polymer that is typically utilized in a hydrated state.

18. With respect to the rejection relying on Mase, applicant urges that neither of the four electrodes of Mase shares a common reference/counter electrode. Applicant appears to be missing the larger issue taught by this reference. Namely that Mase teaches that the function of two separately provided electrodes for two different electrochemical cells (like the electrodes 12 and 14 of fig. 3) can have their function combined into a single electrode providing its function for both cells (like electrode 12 of fig. 2). Maclay already taught the use of counter/reference electrodes. What Mase suggests is that two separately provided electrodes (like the two reference/counter electrodes of Maclay) can have their functions be performed by a single electrode.

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***Conclusion***

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 6:30 A.M. to 4:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished



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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Kaj Olsen', with a long horizontal flourish extending to the right.

Kaj Olsen Ph.D.  
Primary Examiner  
AU 1753  
April 28, 2004